

## ABSTRACT

An economical optical network is constituted by effectively using network resources by using the minimum number of, or minimum capacity of 3R repeaters. 3R section information corresponding to topology information on the optical network to which an optical node device itself belongs is stored, and the 3R section information stored is referred so as to autonomously determine whether or not the optical node device itself is an optical node device for implementing the 3R relay when setting an optical path passing through the optical node device itself. Alternatively, when the optical node device itself is a source node, another optical node device for implementing the 3R relay among the other optical node devices through which the optical path from the optical node device itself to the destination node passes is identified, and this identified optical node device is requested to implement the 3R relay when setting an optical path in which the optical node device itself is a source node.